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EDITORIAL

THE PROGRESS OF THE JOURNAL

IT is with considerable pleasure that we of the editorial staff view the place the MEDICAL JOURNAL occupies in the student life of the Faculty of Medicine. During the three years of its existence THE JOURNAL has proven itself to be a valuable adjunct to the studies of the undergraduate in medicine. Up to the present time it has been received with probably greater interest among the members of the senior years. As the circulation continues to increase, the students of the junior years will, we believe, recognize THE JOURNAL as a valuable medium of expression, and will contribute more freely articles of interest both to their fellow class-mates and others. This reticence on the part of the junior students will, no doubt, soon wear off as THE JOURNAL becomes more and more established in the Faculty. This is perhaps the most important constructive criticism that we desire to make, and we hope that the students of the first three years especially will see the value of contributing articles both for the satisfaction of seeing their own articles in print, and in helping to enlarge the scope of THE JOURNAL.

The proportion of student to staff articles in volume three, has remained about the same as in volume two. As was stated at the conclusion of volume two, the generous co-operation of numerous members of the staff has largely determined the success of THE JOURNAL. To this statement we strictly adhere; and moreover, the approval of the staff is a factor which is absolutely essential at all times to the well-being of THE JOURNAL in the Faculty.

In looking toward the future, we are of the opinion that the UNIVERSITY OF TORONTO MEDICAL JOURNAL is here to stay. As time goes on its place in the Faculty will, we hope, be altogether undisputed, so that every undergraduate will not just occasionally purchase a copy, but will look forward to each issue as an aid and an added stimulus to his work; and then the yearly subscription will be a thing of popular reception rather than the choice of the minority.

PALPATION OF THE THYROID GLAND

PRECISION of examination is a very desirable and necessary acquirement if one is to have the available knowledge of a patient's physical condition in a minimum time. The usual method of examination of the thyroid gland, because of its secluded position, is perhaps less productive of exact knowledge than the examination of any other vital structure in the body. The method is not vigorous and precise enough to give more than a general impression of the condition of the anterior surface of the lobes.

A method* has recently been suggested which combines ease, precision and thoroughness.

The patient is placed in a sitting position while the examiner sits facing him. The chin is raised and the head turned slightly toward the side to be first palpated. Suppose this to be the right lobe. The examiner's right hand is placed about the patient's neck, the fingers posteriorly, the ball of the thumb on the *left lateral base of the thyroid cartilage* and the first fraction of the trachea below. Pressure by the thumb from the front attempts to approximate the fingers. The right gland to the right. The fingers of the left hand are now pressed deeply behind the right sterno-mastoid muscle and great vessels while the left thumb from the front attempts to approximate he fingers. The right lobe will now be distinctly outlined between the thumb and fingers. The limits of the normal and even the atrophic gland can be defined by having the patient swallow while so holding the lobe. The method is of value in the determination of slight unilateral enlargement or the presence of small adenomata in the posterior aspect of the gland. It may also be of assistance in the more obscure cases of exophthalmic goitre where symptoms are present but there is questionable hypertrophy.

The efficacy of the method has been proven by the palpation of cases of normal thyroid and its routine practice has been found a very valuable aid in physical examination.

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*Method described by F. H. Lahey, M.D., Boston. Journal American Medical Association, Vol. 86, No. 12.

CHOLECYSTOGRAPHY*

By W. H. Dickson, M.D., C.M.,
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Since the Roentgen ray was first added to the armamentarium of the diagnostician probably no phase of the science has given rise to so much diversity of opinion, criticism and misunderstanding as the attempted diagnosis of gall-bladder disease and gall-stones by the radiological method.

Lack of appreciation of the difficulties contended with was no doubt to a great extent the cause of this unhappy condition. A gall-stone being to all intents and purposes a stone and of different density than the surrounding tissue should be shown on the plate or film. The criticism for failure to do so often being visited entirely on the radiologist, all other factors being overlooked.

If we only considered for a few moments some of the difficulties, much of this unjust attitude towards the radiologist would be changed. Gall-stones vary so much in their composition, some possessing no calcium whatever, others being of the same density as the surrounding tissue, it is readily seen to be a physical impossibility to demonstrate these by the ordinary method.

If an unbiased view of the literature on gall-bladder investigation by the radiological method is made we cannot help being impressed by the earnestness of all the investigators to place all the evidence possible on the plate or film. They also developed a high degree of efficiency in the interpretation of this evidence.

Knox of England, Ledoux-Lebard of France, McLeod of Shanghai, Cole, Pfahler, Case and Leonard and George of America, all brought their best efforts to bear on the solution of the problem. These men did succeed to a great degree in raising the percentage of correct diagnosis, and demonstrating the reason of failure when failure did occur. However, with the best that could be done it was found only 40 to 50% of gall-stones were actually being demonstrated.

The advent of the barium meal revolutionized the diagnosis of lesions in the Gastro Intestinal Tract, and the use of the opaque salts in the investigation of the Genito-urinary tract increased the efficiency of the workers in this field. With these lessons learned, it was felt that some similar method could be devised for the investigaton of the gall-bladder. If some substance could be introduced into the gall-bladder by oral administration, subcutaneous injection on intravenously, the condition of the gall-bladder and its function could be studied. By such a method the diagnosis of gall-bladder disease would be placed on a par with Gastro Intestinal an Genito-Urinary work. Whatever substance was to be used must be non-toxic, easy of administration unlimited in supply, and inexpensive.

To Drs. Ewart A. Graham and Warriner H. Cole of St. Louis,

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*Published by courtesy of *The University of Toronto Medical Bulletin.*

belongs the honour for the discovery of this method and the placing of it in the hands of every radiological laboratory.

In a search for a test of liver function various dyes were used. It was demonstrated certain ones were almost entirely excreted by the bile and gave shadows of the gall-bladder on the X-ray film. Among these was Tetra-Chlor-phenolphthalein. The Sodium salt of the Tetra-Chlor-phenolphthalein was first used, but the shadows given were not satisfactory. Further experiments were made with the Tetra Iod-phenolphthalein. Very satisfactory shadows were obtained of the gall-bladder in animals, but the toxicity was too great to allow its use in man. Tetra-Brom-phenolphthalein, the Calcium salt, was next used. When injected intravenously it was found to give clear-cut shadows of the gall-bladder and to have little toxic effect. It was the preliminary report of this work (1) that created a renewed interest in gall-bladder investigation.

In a few weeks time investigations showed that toxic reactions were occuring after the administration of the Calcium salt of Tetra Brom-phenolphthalein, the reaction being characterized by nausea, vomiting, headache, backache and a slight fall in blood pressure. On account of these reactions the Sodium salt of Tetra brom-phenolphthalein was tried intravenously. The latter salt being more soluble, a much less amount of solution was used, 35 to 40 c.c.'c being sufficient. In the report on the use of the Sodium Salt (2) it is stated that reactions were less severe and less frequent.

In a later article (3), Drs. Graham and Cole reported the use of the Sodium Tetra Iod-phenolphthalein Salt intravenously. Smaller doses of this salt are used as compared with the ones previously employed, 3.5 grams being sufficient for a patient weighing 130 pounds. The cystogram obtained being equally good in comparison with the ones obtained by the earlier method. The reaction was also found to be no greater than with the Sodium Tetra Brom-phenolphthalein. At this time the results obtained and reported from other laboratories appeared to be so satisfactory that we felt justified in adopting the method. Ten cases were selected and the intravenous method used. The recommended technique was strictly adhered to and the Sodium Tetra Brom-phenolphthalein Salt used. Our experience at this observation was much different than reports from other centres led us to expect. 70% of the cases gave reactions varying from slight headache and backache to very severe vomiting and purging, and a marked drop in blood pressure. These results were probably due to some variation in the physical characteristics of the salt supplied us for the test. However, the results were so disappointing no further attempt at intravenous injection was done at that time.

The possibility of oral administration was brought forward and with this end in view suitable covering for the Tetra Brom-phenolphthalein Sodium Salt was searched for. Simple gelatin capsules were first used, but on administration it was found the capsules were dissolved by the gastric secretion, liberating the salt into the stomach, thus causing nausea and vomiting, very little of the salt passing into the intestine to be absorbed.

Hardening the capsule by exposure to Formalin for forty-eight hours was then tried. When these capsules were administered it was found most of them were carried into the large bowel and passed without dissolving, or dissolving late and setting up an intense diarrhoea.

The next step was to coat the untreated capsule with some substance not soluble in the stomach but soluble in the intestine. Eventually Keratin was used and proved satisfactory.

The shadows of the gall-bladder obtained by this method of administration of the Sodium Salt of Tetra Brom-phenolphthalein was not as clear as desired and the Sodium Salt of Tetra Iod-phenolphthalein was used. This latter salt gives a much denser shadow and is no more irritating when given orally than the Tetra Brom-phenolphthalein. Through the aid of Mallinckrodts Canadian Branch at Montreal, compressed tablets of the salt were prepared and covered with a Keratin coating, .5 grams of the salt being used in each tablet. These tablets are the ones we use at the present time.

The patient to be examined received printed instructions at the time the tablets are prescribed. These instructions are as follows:

At 7 p.m. supper is taken. The supper consists of a meal made up of carbohydrates, no fats or proteins being allowed, and the meal should be rather bulky. The Tetra Iod-phenolphthalein tablets are ingested during the meal. Eight .5 gram tablets are given for a patient weighing 130 pounds.

As soon after the meal as convenient the patient retires, reclining on the right side until sleep intervenes. During this time water is taken every half hour.

The patient is requested to be at the laboratory next morning at 9 a.m., no breakfast being indulged in, even the thought of food being abstained from, so no stimulation will be given to the gall-bladder.

A series of plates is made, and the patient is instructed to partake of a breakfast consisting of fats and five hours later a second series of plates is made.

With a normal functioning gall-bladder the first series should show a well-filled clear-cut shadow of the gall-bladder, the salt being excreted in the bile and concentrated in the gall-bladder. The second series of plates will show the gall-bladder empty, or nearly so. If a shadow is present the patient is instructed to return the following morning for further plates, when all traces of the salt has disappeared. If a shadow is present at the third series it is reasonable to presume that some obtrusive condition is present. If no shadow has been detected at any time during the observation it is evidence of malfunctioning, some one or more of the following being present. Gall-stones may be present in such numbers as to allow none of the salt in the gall-bladder. A stone may be present in the cystic duct, adhesions may be constricting the duct. The gall-bladder may have its mucosa so destroyed by chronic cholecystitis that concentration of the salt cannot take place.

In a series slightly in excess of 600 cases where the salt had been administered orally, about 70% of the cases gave a clear-cut shadow of

the gall-bladder and emptied within twenty-four hours, showing normal function.

In the cases going to operation in which a diagnosis of malfunction had been given from this method 80% were correct. This 20% error in diagnosis was evidence that for some reason a certain number of normal cases did not excrete the salt in the bile, although the tablets were dissolved in the intestine, as evidenced by the presence of the salt in the bowel when plates were made.

To overcome the fact of non-visualization in these cases, the intravenous method was again adopted. By the intravenous method it was found 7% of the cases that failed to give a shadow when the salt was administered by mouth, gave very clear-cut shadows when the salt was exhibited intravenously.

Certain variations in the detail of the technique as described by Drs. Graham and Cole were made, more to fit the patients working day than for any other reason.

The patient is requested to come to the laboratory at 4.30 p.m., breakfast and lunch having been taken. Cathartics are prohibited for the twenty-four hours previous. The intravenous injection is given at this time and a supper of carbohydrates is partaken of as soon as possible after the patient leaves the laboratory. Instructions are given to retire after supper and lie on the right side until sleep intervenes.

At 9 a.m. the patient presents himself at the laboratory, no breakfast being allowed before this, and the first series of plates made. A breakfast of fats is ordered and the second series of plates made five hours later. Twenty-four hours after the first series a third series is made. By this method if the gall-bladder is normal, a well defined shadow is cast on the film. The shadow will be somewhat denser and the gall-bladder appears slightly larger than by the oral method. At the five hour period a slight residue will be found more often by this method than by the oral method, but the third series made thirty-eight hours after the injection of the salt should show the gall-bladder clear.

The interpretation of the films made by this method is similar to the ones made after oral administration and stated above.

The technique used in the intravenous method is practically the same as employed in the administration of Salvarsan.

Two burettes are used, one containing the solution of Tetra Iod-phenolphthalein, the other normal Saline solution. These burettes are connected to a glass Y tube with clamps above the tube to close each burette as required. From the lower portion of the Y tube a single tube leads to the needle and in this latter tube is inserted a lamb's wool filter.

The Tetra Iod-phenolphthalein is dissolved in distilled water, 3.5 grams being used for an adult of 130 pounds. The solution is then made up to 50 c.c. by adding distilled water and the whole is sterlized in a water bath for fifteen minutes.

The needle is inserted in the usual way, a slight amount of blood being allowed to flow. The Saline burette is then opened, about 10 c.c. being given to ensure the presence of the needle in the vein. This burette is closed and the one containing the Tetra Iod-phenolphthalein solution

opened. 50 c.c. are allowed to flow into the vein, about twenty minutes being taken for this so that any untoward results may be noted early in the administration. When the desired amount of the salt has been administered the burette is closed and the normal Saline once again opened and allowed to run until all of the Tetra Iod-phenolphthalein has been removed from the tubing and needle, thus ensuring that none of the Tetra Iod-phenolphthalein passes into the cellular tissue.

In our series of intravenous cases we have had two cases of slight reaction, headache, backache and a grippy feeling lasting two hours. Two cases gave us very severe reactions, vomiting, nausea and headache, lasting for over twenty-four hours. Two cases developed Phlebitis and one case Cellulitis.

With our oral administration series practically no untoward results have occurred, a few cases reporting some nausea. On investigation it was found in all the cases reporting a gastric upset a very light supper had been taken. None of the cases taking a bulky meal at the time of administration of the tablets reported any disturbance.

Conclusions

1. By both the oral administration and the intravenous injection of Tetra Iod-phenolphthalein Sodium Salt the normal gall-bladder may be demonstrated on the X-ray films. The presence of stones demonstrated in many cases when the film made in the ordinary way would show no evidence. Definite deformities and evidence of adhesions involving the gall-bladder may be demonstrated.

2. In about 20% of cases for some unknown reason the oral method fails to give a shadow with a normal gall-bladder.

3. The intravenous method gives a slightly higher percentage of correct findings.

4. The oral method subjects the patient to no ill effects. The intravenous method gives reactions to a greater degree with the possibility of other untoward results.

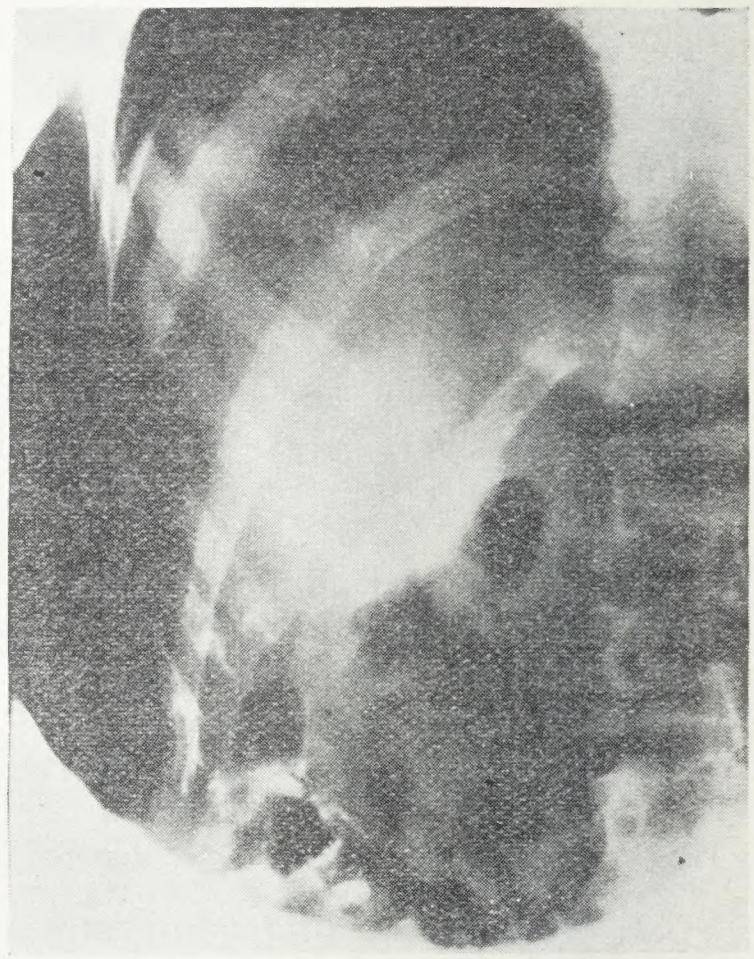
We are of the opinion it is better to use the oral method as the routine proceedure reserving the intravenous administration for the case where there is any question of the gall-bladder being normal although not visualized by the oral administration of the salt.

In closing we would like to acknowledge the help received from Dr. A. C. Singleton of the Department of Radiology. He adapted the Salvarsan apparatus to the particular needs of this work and kindly took charge of all the intravenous administrations.

Bibliography

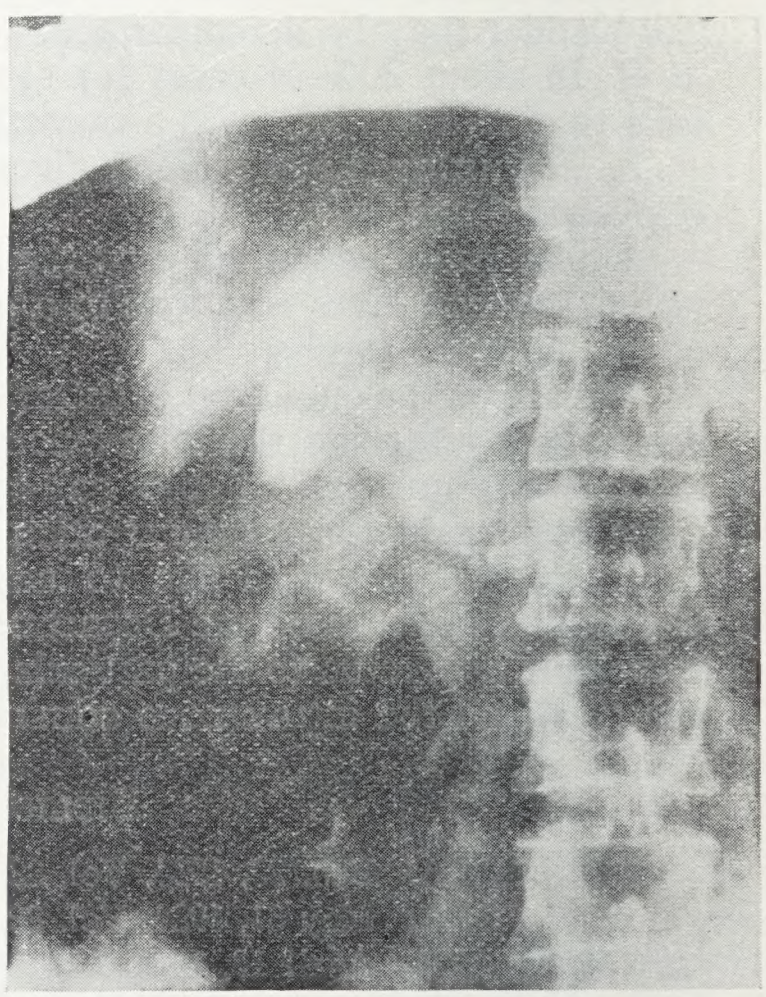
(1) J.A.M.A. Feb. 23, 1924, Vol. 82, No. 8—613.
(2) J.A.M.A. May 31, 1924, Vol. 82, No. 22—1777.
(3) J.A.M.A. April 18, 1925, Vol 84, No. 16—1178.

Normal Gall-Bladder filled with Salt.



Same case five hours later, showing the gall-bladder nearly empty.

Gall-Bladder adhesions against lower border of liver.



Same case showing the slow emptying time.

Gall-Bladder filled with Salt and small soft stones.

Showing the Gall-Bladder filled with Stones and a slight amount of Salt.

Gall Stone.

Same case showing Salt in Gall-Bladder.

THE LANGUAGE OF MEDICINE

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"Polonius: What do you read, my lord?"
"Hamlet: Words, words, words."

"False words are not only evil in themselves, but they infect the soul with evil."—Socrates.

"I am not so lost in lexicography as to forget that words are the daughters of earth and that things are the sons of heaven."—Samuel Johnson, Preface to Dictionary.

A considerable portion of a student's time at college is spent in learning the nomenclature of the profession he is to follow for the rest of his life because a science without words is inconceivable; therefore it may not be amiss to consider this currency for the exchange of thoughts, knowing full well that language must always be a servant of the intellect. Words are only the signs of thoughts, but thoughts make history.

Nevertheless, as Bentham says, error is never so difficult to be destroyed as when it has its roots in language. It is therefore the duty of every acolyte who serves in the temple of Aesculapius to learn in his youth a deep reverence for the integrity of words and to conserve the force and beauty of his tongue. The coarse man will be known by his adjectives, but the real thinker will show conscience and modesty in his speech. The pure in heart will speak from the fulness thereof, well knowing that baseness lingers on the breath and pollutes the air: that men have damned themselves, even as they have glorified themselves, by a single word. Well might the little maid say to others than Peter, "Thy speech bewrayeth thee".

In the manifold departments of modern science every advance gives birth to a number of hitherto unknown words. Sciences and arts, like nations, have languages of their own, many of them reaching far backward. Just as the geologist can reconstruct from fossils, the story of creation, so the study of the etymology of medical terms enables us to build again the history of our art. We soon see, when we begin to delve into this archeology of language, that words, like the cells of animals, die when their natural functions have been fulfilled. With the passing of phlebotomy, for instance, died also its terminology, and such words as *acopa*, *antiloimica* and *melanogogue* are no longer to be found in medical books. There are few physicians to-day who have even seen a *phleme*. Many an hypothesis, too, supported by the ablest physicians of the day, has disappeared, leaving sometimes, not a wrack behind, and at others only a word or two, which we may find hard to understand. Thus, for example, *salt rheum* and *rheumatism* hark back to the humoral theory of disease (ῥεῦμα, a humor). The former meant that there was a salty humor in the blood, and the latter that the body was full of humors. Proper mixture of the humors produced

temperaments, and a lack of equilibrium caused *distemper*, a word still used in veterinary science, but, of course, with another meaning.

The original significance of many words becomes modified as the decades swiftly pass. In some instances its falsity bears it down; in others its uselessness kills it. It may embrace a wider meaning or else change its meaning altogether. *Salt* originally meant sodium chloride, but is now no longer applied to that substance alone. Similarly *oil* was once only olive oil. *Arsenic* meant to the ancient Greeks those natural substances which possessed strong and acrimonious properties. Orpiment (arsenic sulphide) was one of these powerful poisons, and the dominant ingredient came to be called arsenic.

The history that we thus weave together is not always flattering to our profession, for we find that *therapeutist* is derived from θεραπών, a slave. Even in the Bible we cannot escape the shaft of the satirist, for we read, "And Asa sought not the Lord in his affliction, but to the physicians, and Asa slept with his fathers". When a disgruntled patient wishes to consume his surgeon with the fire of his wrath he calls him a butcher. But it is pleasant to remember that there is little original in his remark, for Arcagathus, the first Greek physician, was dubbed *carnifex*.

Our study of the history of words shows us that we came through a period when men were swayed by the alchemist and the astrologer. *Elixir* is from the Arabic *Al-eksir*, the philosopher's stone, while *mania* (μήν, the moon) and *lunatic* (luna) are echoes of the days of the horoscope, when the satellite of the sun exerted great influence upon the brain. Nor is this superstition entirely dead, even in Canada, for there are still many persons, neither ignorant nor illiterate, who watch the phases of the moon to know when to sow their crops.

Then we have the water-marks of the great influence of mythology in such words as *plague* and *apoplexy* from the Greek πληγή, a blow, in this case from an angry Jove. *Phosphorus* was the morning star, the *tendo Achillis* immortalizes the son of Peleus, and *atropine* recalls the old hag, *Atropos*, who snipped the thread of life. Nor were the deities themselves forgotten. *Saturnine*, *vulcanize*, *mercury*, *hermetically* (Ερμης) *psychiatry* (Psyche) *iris* (blue flag), *mons veneris* and *venereal* (Venus, Latin) and *aphrodisiac* (Aphrodite, Greek), and *morphine* (Morpheus, god of dreams) show that at one time, at any rate, all Olympus was interested in medicine. We see also the influence of the Norse mythology in *nightmare*, from the demigod Mara. Many of the words dating back to these ancient days have changed their meaning. Thus *poultice* was originally bean porridge, *artery*, the windpipe, *trachea*, the rough windpipe, and *melancholy*, black bile.

A few centuries later we find ourselves among mediaeval shrines in an age perhaps more pious, but certainly not less superstitious. Our medical forebears of that period have left their impress on our etymology in *St. Vitus' dance* (chorea), *St. Ignatius' bean*, and *St. Anthony's fire* (erysipelas, also called the sacred fire). *Epilepsy* was the sacred disease, and whether *os sacrum* was sacred or cursed is still a vexed question. Perhaps in this period, too, belongs *cretin*, originally *Christian*. The Arian refugees of the Pyrenees were anciently called in French, *Chretiens* or Christians. Long residence in these dim valleys, with a lack of iodine

in the snow-water, produced a peculiar idiocy which came into English as *cretinism*.

But there are many more facets to our medical philology, a word, by the way, which Cockeram defined in his dictionary of 1642 as "a love of much babbling". All sorts of strange metaphors and poetical figures have been precipitated on the filter paper of time. *Icterus* once conveyed the idea of a yellow bird (ἴκτερος), while *iliac passion* is a phrase which recalls the spear thrust and the tragic sufferings on the Cross. *Calculate* and *testify* take us back to the days when men counted with pebbles (calculi) and cast their votes with shells (testae). *Carbuncles* were originally purplish-red gems. Other words which belong to this category are: *scrofula*, a little pig, because persons suffering from tuberculosis of the lymph glands had a large neck, like a pig; *imbecile*, one who has to walk with a cane, *in bacillum; aconite*, found growing on sharp rocks, ἐν ἀχόνυς; *vagus*, wandering; *calomel*, a *beautiful* (καλός) remedy for *black* (μέλας) bile, and *nausea*, literally ship sickness (ναῦς, a ship).

Often we find the name derived from a place. Copper, *cuprum*, was first worked in Cypris; *magnesia* and *magnet* came from Magnesia in Thessaly; *coco* from Choco in Mexico; *rhubarb* from Rha barbarum, because it grew on the *wild* banks of the river *Rha*, or Volga. *Charlatan* comes through the French from the Italian, *ciarlatano*, an inhabitant of Cerreto, where the people were notorious for their boasting. *Clap*, the vulgar synonym for gonorrhea, is derived from the name of a part of Paris, Le Clapier (literally a rabbit burrow), famous for its brothels, called *clapise*. Other names of places are: *sherry* (Xeres in Spain) *augustura*, after a place in Venezuela; *jalap* (Xalapa, in Mexico); *tolu* (New Granada); *tobacco* (Tobago) and *colchicum* (from Colchis).

The names of discoverers and inventors are, of course, perpetuated, as students of anatomy remember in the fissures of *Sylvius* and *Rolando*, and the foramen of *Munro*. *Galvanism* and *Roentgen ray* are other examples. Nicot is remembered in *nicotin*, which he discovered, and Pelletier in *pelletierin*, the alkaloid of pomegranate. Two doctors have been immortalized, Dr. *Guillotine*, who was one of the first to suffer death by the apparatus he devised, and Dr. *Condom* has a *monumentum aere perennius* in the appliance which commemorates his name. Other proper names were: *quassia*, after a West Indian slave, *valerian*, from a Roman Emperor, and *cinchona*, from the Countess Chinchon, who first introduced Peruvian bark into Europe.

Often times the part of the body or the disease, suggested a similarity to some well-known object, and so a number of words were added to our vocabulary. Thus we have *vomer*, the ploughshare; *tibia*, the flute; *clitoris* (κλεῖς, a key), the door tender; the *testes* were *evidences* of virility, and *theobroma* is the food of the gods (βρωμα, food). The little tumors growing in the eyelids are hailstones (χαλάσιον), and *pannus* is a cloth growing over the eye.

Then there were mistakes and corruptions that were perpetuated in names. *Alligator* was from *el ligarto*, meaning only "the lizard", but the British tar thought it was the name of this last descendant of the dinosaurs. *Isinglass* was a corruption of the German *hausenblase* and meant only fish bladder. *Shingles* came to us in the monastic period,

probably, and was originally *cingulum*, a girdle, because herpes zoster often appeared at the waist. *Bedlam* was the vulgar pronunciation of the asylum of St. Mary of Bethlehem, and *caraway* was an attempt to pronounce *carui*, the botanical name of the plant, just as people nowadays say *'stortions* for nasturtiums, and *patience plant* for *impatiens*. *Saltpetre* was once *sal petra*, rock salt.

There are also derivations, more or less fantastic, evolving from a perfervid philologist's brain. *Cadaver*, for example, was said to be formed from the first letters in the words *ca*ro *da*ta *ver*mibus, flesh given to the worms. Unfortunately the weight of opinion seems to be that it comes from *cadere*—to fall dead. Then *laudanum*, by a similar feat of the imagination, was supposed to originate from *laus deo*, praise God, which were the words commonly used after the patient had taken the draught. But, long before Latin was spoken, there was a Persian word, *ladanum*, a soothing potion, made from a shrub. All of which reminds one of the yokel's explanation of the word, Jew: "They will jew you and jew you and that's why they are called Jews". *Antimony* has a legend about it. An abbot named Basil Valentine experimented with this drug upon some hogs which, he found, thrived upon it. When, however, he tried it upon his monks, he learned that it acted with well-nigh fatal violence. Therefore the term *antimony* (anti, against, and monachos, a monk), not good for monks. *Damiana*, a hypothetical aphrodisiac, is said to be derived from *dami anna*, "Give me Anna", a noted prostitute in the Spanish town where this drug was first used.

Many of our terms go back to the Greek gender. *Arsenic*, for example, is derived from ἀρσενικός, masculine, while *silver* was feminine, and therefore sacred to *Luna*, the moon. "It follows then, as night the day" that silver salt (*lunar* caustic) must be a sovereign remedy for *lunacy*, and as a matter of history, it is only half a century since it was displaced by the bromides.

Two other words might be mentioned in this connection. *Delirium* comes from *de* and *lira*, out of the furrow, and *risus Sardonicus*, the Sardinian laugh, was so called because in that island there is supposed to be a plant which caused people to die laughing.

Many words have been smoothed down by much wear, like the pebbles on the beach. *Hemicrania*, for example, although still retained in scientific vocabulary, passes into the vulgar tongue as *migraine* or *megrim*. *Quinsy* was an attempt to say *cyanche*, from χύων, a dog, and ἀγχω, to choke, alluding to the growling noise made by one suffering from suppurative tonsillitis. *Hydrops* became *dropsy*, and *tansy* was a shortened form of *athanasia*, immortality (literally, without death). Scientific names were ever a stumbling block to ὁι πόλλοι, so we find the plant, *inula campana*, corrupted into *elecampane* and the Greek *glycyrrhiza* passing through the Latin *liquiritia* into the English *liquorice*.

Space does not permit more than a brief reference to the various tongues that have contributed to our medical vocabulary. The Arabs gave us *alkali* (al quali, the ashes of glasswort, abounding in sodium) and *alcohol* (al kahal, a powder to paint the eyebrows). From Hebrew we have *cassia* and *cinnamon*; from Persian, *lemon* and *orange*, while from Mexico we have *jalap* and *cochineal*. Coming down to more recent introductions, we find that the French, who excelled in obstetrics,

gynecology, and neurology, have left their stamp on the nomenclature of these specialties. From our Gallic neighbours, too, we got percussion and auscultation, with many of the terms transferred bodily as *bruit* and *râle*, and others from the Greek, but by the lips of the great master, Laennec—*pectoriloquy*, *bronchophony* and *rhoncus*. And so we could go on down through most of the ancient and modern tongues to find that each had given us its quota.

In the matter of pronunciation, doctors are proverbial sinners. We have delegated to ourselves certain powers in orthoepy which do not belong to us. Sometimes we have shown our scorn for the dictionary and continue our mispronunciation in spite of all authority. But the dictionary is really the most democratic of institutions. Man's achievements in every walk in life, be they for good or for evil, must be placed on record. The lexicographer makes this record and posts it in the pages of his dictionary. No one man has ever been endowed with pontificial authority over letters. In literature, as in medicine, there is no pope, and therefore no such thing as *lèse majesté*. An error by one of the cloth professorial is no more sacred than a student's mistake. An appeal, then, to the court of last resort, the dictionary, shows that we are every day miscalling many of the ordinary words of our medical conversation, some of which are found in the following list:

acetyl—as′-etil, not a-se′til.
adult—adu′lt, not a′d-ult.
agave—ag-ā′-ve (3 syllables).
albinism—al-binism
angina—either an-jī′-na or a′n-ji-na.
apocynum (dogbane)—a-pŏs′-inum, not ă-po-s′y-num.
atrophic—a-trŏ′-fic, not a-trō′-fic.
cocain—cō′-ca-ĭn (3 syllables), not co-cā′ne (2 syllables).
caffein—că′f-ē-in (3 syllables), not c′af-een (2 syllables).
canine—ka-nī′n, not kā′-nī′n.
cerebral—se′r-ebral, not se-rē′-bral.
cervical—sĕ′r-vical. Only Webster gives ser-vī′-cal.
citrate—sĭt-rate, not sī′-trate.
codein—cō′-de-in (3 syllables).
crureus—kru-rē′-us, not kr′u-re-us.
culinary—kū′-li-nary, not kŭl′-in-ary.
diabetic—dia-bĕt′-ic, not dia-bēt′-ic.
dissect—dĭs-sect′, not dī′-sect.
duodenal—duo-dē′-nal, not du-o′denal, although this pronunciation is very common in the United States.
eczema—ek′-zema, not ek-zē′-ma.
enema—ĕn′-ĕma. It is rather a surprise to learn that the two Canadian representatives on the Standard Dictionary Committee favoured en-ē′-ma (Dr. Goldwin Smith and Prof. Reynar).
epulis—epū′-lis, not ĕp′-ulis.
facet—făs′-et, not fa-sĕt′.
filix—fī′-lix, not fē′-lix.
fomites—fŏm′i-tez, not fŏ-mī′-tes.
gingival—jin-jī′-val, not jin′-ji-val.

dyspnoea—disp-nē′-a, not dis-nē′-a.
purulent—pū′re-u-lent, not pu′rr-u-lent.
flaccid—flāx-sid, not fla′ss-id.
gynaecology—jin′-e-cology, not gu′y-ne-cology.
hydatid—hī′-da-tid, not hi-dăt′-id.
hygiene—hī′-ge-ēn (3 syllables), not hi′-gēn.
hypothenar—hy-pŏt′h-en-ar, not hy-po-thē′-nar.
intestinal—in-te′st-tin-al, not in-test-tī′-nal.
iodoform—i-ŏ′d-o-form, not i-ō′-do-form.
jejunum—je-jū′-num, not jĕ′j-u-num.
jugular—jū′-gū-lar, not jŭ′g-u-lar.
laudanum—la′ud-an-um, not la′ud-num.
lipoma—lī′-po-ma, not lĭp-oma.
luteum—lū′-te-um, not lū-tē′-um.
morphine—mō′r-phēn, not mor-phe′en
neurolgia—nū-rŏ′g-liah, not nū-ro-glī′-.ah.
obesity—ō′-bĕ′s-ity, not o-bē′-sity.
parenchymatous—par-en-kĭ′m-a-tous, not par-en-kī′-ma-tous.
paresis—pa′r-e-sis, preferable to par-é′-sis.
pineal—pĭ′n-e-al, or pī-nē′-al.
ptomain—tō′-mā-in (3 syllables).
purpura—pŭ′r-pūr-ah, not pŭr-pū′r-ah.
rationale—ration-ăl′-e (5 syllables).
rigor—rī′g-or (Latin); rĭg′or (English).
salicylate—săl′-i-cylate, not săl-i-cyl′ate.
scybalous—sĭb′-a-lous, not skĭb′-a-lous.
skeletal—skĕl′-et-al, not ske-lēt′-al.
synovitis—sĭn′-o-vitis, not sī′-no-vitis.
syringe—(noun) sĭr′-ing, not sir-inj′.
ureter—ū-rē′-ter, perferable to ū′-re-ter.
vaginal—vaj′-i-nal or va-jīn′-al.
pathognomonic—path-og-nomo′nic. not path-o-nom′onic.

There are two words that are commonly confused in medical papers, *regimen* and *regime*. The former means a regulation of diet, while the latter relates to political and social government.

Knowing then that mistakes and confusion are spread in the world by an ill use of words, let us aim at meaning what we say and saying what we mean, always avoiding what Carlyle calls "frothy vocables." Good taste demands that words shall not be mutilated, utility that they shall not be confused or degraded. In this day of exaggeration and restricted vocabulary it is well for us to remember that since the beginning of literature writers who think clearly and with precision have ever been those who choose phrases of beauty and words of definite meaning and appropriate bearing.

And let us end as we began with a quotation from a wise old philosopher, this time Confucius, "A blemish may be taken out of a diamond by careful polishing, but if words have the least blemish there is no way to efface it."

THE DIAGNOSIS OF SUB-ACUTE BACTERIAL ENDOCARDITIS

Douglas Noble, B.A., '27

Definition: A sub-acute low grade inflammation of the endocardium due to the streptococcus viridans or to other organisms and characterized by the formation of diffuse vegetative lesions of the endocardium, which more or less constantly discharge bacteria and emboli into the circulation.

In this definition, the chief difference between this condition and the forms of heart disease usually seen, of rheumatic, syphilitic or arterosclerotic origin, is made clear; while these latter conditions constitute the end-result of a prolonged disease process, bacterial endocarditis is the disease process itself in the active state.

Clinical Manifestations. (1) Clinically sub-acute bacterial endocarditis falls into three divisions:

(a) Usual Type.

Previous history of heart disease in all cases, usually directly traceable to rheumatism

1. *Early Signs and Symptoms.*

1. Onset is insidious; patient, usually a man between 25 and 35 years of age feels "out of sorts" but continues at his work. 2. Weakness next becomes a marked symptom and is associated with loss of weight and occasional night-sweats; very frequently, with anorexia and gastro-intestinal disturbances. 3. Cardiac symptoms which are probably already present, become increased, *e.g.* palpitation, sense of pressure, dyspnoea, cough and expectoration. 4. Slight persistent fever 99.5—101 F.

Physical Examination.

Examination at this stage may be almost entirely negative, but it is probable that a persistently high pulse rate will be detected out of proportion to the slight fever. In addition there is, as a rule, a marked degree of pallor, with gradually increasing anaemia. Clubbing of the fingers may be observed.

2. *Later Signs and Symptoms.*

1. Embolic Phenomena.

(*a*) Recurring crops of petechiae appearing at intervals, scattered irregularly over the body. (*b*) Stabbing pains felt in left upper quadrant of abdomen (occasionally in other parts) and accompanied by chills. (*c*) Appearance painful erythematous nodules in the subcutaneous tissues of the palms of the hands and soles of the feet. (*d*) Pains in the chest with hemoptysis.

2. Cardiac Manifestations. Marked symptoms of myocardial disease do not usually accompany this condition in which the chief trouble seems to come from the infective emboli. Later, however, weakness and

fatigue become prominent symptoms while the anaemia is profound. On examination of the heart:—

(*a*) The usual signs of valvular disease will be found, either the aortic or mitral valve being affected, and very commonly, both. (*b*) Tenderness over the manubrium sterni is a very constant sign. (Behrens.)

Laboratory Findings:—

1. Blood. Marked secondary anaemia. Haemoglobin 30-40%. White blood cells 12,000.

Culture (Rosenow technique should be used). Positive for strep. viridans.

2. Urine. Albumin, few casts, and red blood cells frequently present due to an embolic form of glomerulo-nephritis.

(b) The Bacteria-Free Stage.

Libman observed that a considerable number of his cases who had previously shown all the physical appearances of sub-acute bacterial endocarditis passed sponstaneously into a stage in which the clinical symptoms were much ameliorated and where repeated blood cultures yielded negative results. A careful investigation into this stage of the disease showed that it possessed many features quite distinct from the ordinary type of bacterial endocarditis described above. No definite explanation for this striking manifestation of the disease has been forthcomng, but it is thought to be due to an increased vascularity around the lesions which permits the organisms to pass into the bactericidal blood and be destroyed. Fibrosis with contraction of the valves then follows.

Prominent features of the bacteria-free stage.

1. There is a history either of bacterial endocarditis in the active state or of rheumatic heart disease.

2. The temperature is practically normal throughout this stage. Occasional slight rises are accompanied by the appearance of embolic phenomena.

3. Endocarditis Signs. Petechiae are seen in small quantity in a few cases. Stabbing pains in the chest are frequently met with. Erythematons nodules on joints not usually seen.

4. Anaemia is marked and progressive. Haemoglobin 20-65%. White blood count normal.

5. Kidney disease with signs of Renal Insufficiency is almost constantly present. Urine shows albumin and red blood cells. Blood urea is increased. The kidney function is impaired and in 30% of cases uraemic manifestations are present.

6. The spleen is constantly enlarged and palpable in all cases. (Libman.)

7. Signs of myocardial insufficiency are very prominent. This is thought to be due to added strain thrown upon the cardiac musculature by the increased valvular defect brought about in the process of healing of the lesions rather than to actual infection of the myocardium.

In addition to the fact that ordinary cases of sub-acute bacterial

endocarditis show the characteristics of this stage, it is to be noted that the above signs and symptoms are observed in many cases of chronic valvular disease in which repeated blood cultures have been negative. Libman naturally concludes from this that a fair proportion of cases on the hospital wards diagnosed as chronic valvular disease are in all probability suffering from sub-acute endocarditis in the bacteria-free stage.

(c) Mild Form of Sub-Acute Bacterial Endocarditis.

That bacterial endocarditis exists in a mild form which occasionally becomes epidemic was made evident from the results of a series of cases studied in Toronto (1915-1924). In all of these cases, blood cultures positive for streptococcus viridans were found (1915). Symptoms of early sub-acute bacterial endocarditis, fatigue, weakness, restlessness, joint and muscle pains and gastro-intestinal disturbances were present in all cases. Anaemia, chills and embolic phenomena (petechiae and infarction) were absent while fever was very slight.

In 1915, twenty-three of these cases were reported in which, by means of the Rosenow technique, streptococcus viridans was found in the blood. In 1924, three of these cases could not be traced, but twenty were known to be living. Four of these were in perfectly good health, fourteen were well enough to be able to carry on their ordinary occupations, one was about to give up his work and one had not worked for twelve years.

These very striking results have since been confirmed by Salus, who made a study of a similar epidemic of eighteen cases at Prague, and by Capps and Biggs, who also demonstrated the presence of streptococcus viridans in the blood of mild cases of rheumatic fever, which at the time viridans in the blood of mild cases of rheumatic fever, which at the time showed no evidence of involvement of the heart valves. Their work tends to show that the possibility of the presence of this disease must be considered in all patients suffering from mild subfebrile conditions which cannot be explained. In cases of old valvular disease this consideration is most important and blood cultures from these patients should be made when there is a slight elevation of temperature, when they feel tired or unwell, appear anaemic or exhibit pigmentation of the face. These studies, however, are not important in cases who already present evidences of myocardial insufficiency or who have developed auricular fibrillation, since the disease is not apt to attack them.

Notes on Differential Diagnosis

1. *Acute Endocarditis.* Short, stormy course.—Six weeks. Suppurative foci where pyogenic organisms lodge.

2. *Rheumatic Heart Disease.* Petechiae absent, Glomerulo-nephritis not seen. Prolonged remittent fever, clubbing of fingers absent. Blood culture negative.

3. *Tuberculosis.* Cough—physical signs—X-Ray—sputum.

4. *Pernicious Anaemia.* Red blood count, Haemoglobin and smear. Glossitic and nervous manifestations.

Prognosis

(*a*) *Ordinary type.* Prognosis highly unfavourable, death occurring within six months to two years in practically all cases. Libman reports out of several hundred cases, complete recovery in about 4%. Death is usually due to myocardial exhaustion, occasionally to meningitis, embolism of the coronary arteries, etc.

(*b*) *Bacteria-Free Stage.* Unfavourable. Death occurs in from six months to three years, and is due either to myocardial or renal insufficiency or to both. Uraemia occurs in 30% of cases.

(*c*) *Mild Cases.* Prognosis favourable. Recovery in great majority of cases.

Important Points About Bacterial Endocarditis

1. In order to diagnosis this condition early, repeated blood cultures (Rosenow technique) should be made on cases of chronic heart disease which begin to show the symptoms of slight fever, anaemia, etc., outlined above.

2. Since there is actually no treatment for the disease, attempts should be made to ward off an attack by:

(*a*) Thorough examination of cases of chronic heart disease for presence of septic foci, which should be removed.

(*b*) A prolonged rest should be taken by these patients following the development of any intercurrent disease, influenza, pneumonia, etc., in order that the infection may have full time to clear up. This is particularly important with regard to common colds.

(*c*) Oral hygiene is of paramount importance in the care of these cases. Gracie reports that in the majority of his cases, peridental infections were present.

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AN ALLUSION TO GREEK HISTORY

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In 1911 the writer spent two days in the Panama Canal zone and saw something of the work being done in the famous Culebra Cut. He also saw a little of the cities of Colon and Panama. In those two days he saw one mosquito. A perfectly organized public health service had secured for the thousands of people in that territory a lower death-rate than then obtained in any locality of similar extent under the flag of the United States of America. The rigid enforcement of effective regulations had made the place safe for its inhabitants who had a constant reminder of their good fortune in the French cemetery in Ancon, where lay so many of De Lessep's engineers and artisans who had succumbed to Yellow Fever after a brief battle against this plague.

What might they not have accomplished had they had the protection afforded their successors? The question only takes one farther back to other works abandoned and to other failures of great enterprises thwarted by unconquered plagues.

The mind staggers at the possibilities of the present day had not the dark ages intervened between the zenith of Greek culture and the Renaissance. Had Hippocrates known the microscope the Aesclepidae would not have fallen before the earth spirits in the Oracles. Had Aristotle been able to make micro-dissections Biology would have been one of the oldest of the sciences. Had the ancient astronomers and mathematicians been given an unbroken succession, the secret of the lines of the Parthenon would never have been lost and Einstein have been forestalled by a dozen centuries. And so we might go on in unending speculation but what might have been was not for the blight came and bright minds grew dull, agile bodies weakened, a fresher race made conquest and in turn was conquered and ignorance and superstition triumphed for a thousand years.

The French failure at Panama was explained a few decades ago as having been due to malfeasance. It is now explained by the Stegomyia mosquito. The Fall of Greece is cited as a consequence of luxury, vice, political corruption and what not. Should it not have as simple an explanation in the Anopheles mosquito?

In a fascinating book, Malaria and Greek History by W. H. S. Jones in the Publications of the University of Manchester, this idea is given a thorough study. Space will not permit more than a mention of a few of the references and ancient writings upon which this theory is based. Malaria was known to Hippocrates and probably came to Greece from Asia Minor sometime after 500 B.C. The effects were seen in the lack of stamina of the crews of the fleet gathered against the Persians. The long period of the Peloponnesian wars left the land undrained and uncultivated, and the concentration of the inhabitants in towns and camps made conditions ideal for the spread of infection among both men and insects. Moral degeneracy followed as recorded by Hippocrates, who wrote of those who lived in low, moist, hot districts and drank stagnant water. He declared that they of necessity suffered

from enlarged spleen, were stunted, ill-shaped, with natures cowardly and adverse to hardship. The Golden Age of Art and Literature passed. Science ceased to interest and darkness came.

Had Hippocrates known cinchona or had Draco drained the swamps how the story might have been modified! Daedalus might have been written a thousand years before Haldane and the Crusaders' little boys might have learned about the endocrines from their public school books on physiology.

There is chapter and verse to sustain this theory, but this is not the season in which to invite student readers to settle the specific meanings of "καησος" and "ἐπιαλτες".

THE USE OF NITROUS-OXIDE IN LABOR*

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It is the writer's endeavor in this paper to review briefly the historical facts that have been handed down to us in connection with the early use of nitrous-oxide; to compare this anæsthetic with what might be considered the ideal obstetrical anæsthetic and finally, to present some observations that have been engendered by a practical acquaintance with the use of this anæsthetic in labor.

Nitrous-oxide, the gas, became known to chemists in the year 1772. Its discovery by Priestly, an English chemist, followed closely upon the discovery of such common gases as oxygen, nitrogen and so on, and such was the interest aroused at that time among physicians that the Pneumatic Institute was founded with the purpose of treating disease by the inhalation of these various gases. Sir Humphrey Davy, a renowned English chemist, and the first superintendent of the Institute, among his many researches with these gases, discovered in regard to nitrous-oxide that "as nitrous-oxide in its extensive operation, appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place". To substantiate such a statement he not only experimented with animals, but he actually inhaled the gas himself to assuage the pangs of toothache, and his own sensations and the behavior of others under its influence have been recorded. These investigations constitute the first hint of anæsthetics as we know them to-day. It seems strange to us now, perhaps, that a discovery of such practical importance was not at once appreciated by the medical profession. There seems, however, to have been no further developments until Henry Hickman, a young English surgeon, repeated and enlarged upon these experiments and actually operated upon animals under the influence of nitrous-oxide. His results,

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when communicated to the profession both in England and France, met with such ridicule that he died, we have been told, of a broken heart in the year 1829, when barely thirty years of age. It was left to Horace Wells, an American dentist, to finally place nitrous-oxide in the field as an anæsthetic. It seems that his discovery was made quite independently of the work of Davy and Hickman. Wells attended a popular lecture given by an itinerant chemist who, among other experiments, administered nitrous-oxide to one of the audience whom he had induced to appear on the platform. This particular individual became very excited during the administration and somehow or other managed to cut his leg, but afterwards he maintained that he had no recollection of receiving the injury. Wells, accustomed to extracting teeth, and no doubt mostly from protesting patients, at once seized upon this as being of practical value, and the very next day, December 11th, 1844, forty-five years after Davy's pronouncements, he himself inhaled the gas and had a tooth extracted. Upon regaining consciousness his first cry was, "A new era in tooth pulling!" He successfully employed gas in his own practice in a considerable number of cases. He was asked to demonstrate his work publicly in the operating room of the Boston General Hospital. Unfortunately this patient showed not uncertain signs of having felt pain and nitrous-oxide was again discredited. Wells was ruined, became insane, and four years later committed suicide.

In the meantime the anæsthetic properties of ether and chloroform were discovered and these drugs were slowly being introduced, the vogue of nitrous-oxide temporarily ceasing. Dentists in England and America preferring this gas as the anæsthetic for their needs, gradually revived its use and by 1868, nitrous-oxide became recognized amongst dentists and some physicians as a desirable and safe anæsthetic for short operations, there still being, however, some opposition from some parts of the medical profession on the grounds that it was unsatisfactory, if not dangerous. In looking backward, it is easy for us to see why there should have been such diversity of opinion and why this anæsthetic had such a hard struggle to obtain its proper place in medicine. For a long time very little was known about the physiological action of anæsthetic. It must have been very discomfiting to the early administrators to find that certain of their patients, instead of calmly dropping off to sleep became, perhaps, violently excited. Probably little did most of them suspect that such a condition was the normal reaction of these individuals to the anæsthetic, and even less did they know how to cope with it. This factor was common to all anæsthetics then known but in the case of nitrous-oxide there was the additional one of an entire lack of suitable apparatus to still further the delay in its general adoption. One indeed wonders that Sir James Y. Simpson, in his investigations with every likely drug he could think of, failed to have made use of nitrous-oxide, until one remembers this lack of a proper appliance. In 1868, Paul Bert, a French physician, suggested its use in labor, and several obstethicians in different parts of the world took it up, reporting somewhat favorably of its use. The following words of Winkel, one of these pioneers, show us the difficulties under which they labored: "It seems to me most practical to

get the mixture from the apothecary, and that he should be provided with rubber bags which he may fill and furnish the physician when needed. The apparatus, which consists of a rubber bag like a pillow, is inconvenient, but in abnormally painful labor it is at any rate an extremely important remedy." It required the combined efforts of many workers over a period of many years to bring the apparatus to such a state of perfection that the use of nitrous-oxide could become general. Indeed, it was not until about 1910 that an apparatus was perfected which enabled us to administer the gas with oxygen, in accurate proportions, the only way in which it should be given. It is significant that the revival of the use of nitrous-oxide in labor coincided with this perfection of the apparatus.

In the practice of present-day obstetrics there is a great demand on the part of the expectant mother for relief from pain during her labor and in this she is seconded by her obstetrician. It has been said, perhaps too tritely, that a physician's obstetrical ability is judged by the patient and her relatives according to the pain he permits her to suffer. This demand being admitted, what is the anæsthetic to be used? The ideal obstetrical anæsthetic should have no ill effects, immediate or remote, on either mother or child; it should be not unpleasant to take; should be applicable for use over a considerable length of time without interfering with uterine contraction; finally, it should be inexpensive so as to be available for all patients, should be easily and conveniently administered and should require no special training on the part of the administrator.

Unfortunately we have no anæsthetic possessing all these qualifications. It is generally conceded, however, that nitrous-oxide with oxygen comes nearest to reaching this ideal. Of the general anæsthetic in common use it is the least harmful in its effects, both immediate and remote, upon the human body. Its effects upon the blood, liver and kidney functions are practically negligible and its elimination from the body is the most prompt of all anæsthetics, ensuring the early return of any function which may have been disturbed. As an evidence of this freedom from toxicity one recalls that plants will grow and seeds will germinate in nitrous-oxide to which small amounts of oxygen are added. This is not the case with ether or chloroform, growth here being suspended and destruction of the plants occuring if exposed for too long a time. As regards the fœtus, the experimental data available and the clinical experience of many observers indicate that nitrous-oxide produces less effect on the fœtus than is the case with other anæsthetics. Chloroform is the worst offender in this regard, it being known that, experimentally, the young born to mothers who have had one hour's continuous chloroform anæsthetic, have marked fatty changes in the liver. A recent investigation has shown that the percentage of anæsthetic found in the fœtal blood at birth to be one third that of the maternal blood.Theoretically then, in those cases in which spontaneous breathing of the new born child does not occur, artificial respiration should very quickly remove any nitrous-oxide in the fœtal blood, making resuscitation easier under these conditions and this one believes to be the case. It is for this reason that Cæsarean Section is now generally carried out with this anæsthetic.

On the second count one may say that there is little or no smell to disturb the patient, but that in some paients are produced unpleasant sensations such as dizziness, a sense of floating off into space, tingling of the extremities during analgesia, with unpleasant dreams when the gas is exhibited to the stage of light anæsthetic. This is almost always counteracted by warning the patient inhaling it for the first time, that such sensations might occur, but that they grow less, or are noticed less, with each administration. These sensations are always preferred by the patients to the pain. Many patients, on the other hand, experience a pleasant sensation of warmth and a feeling of exhilaration going on to pleasant dreams as light anæsthesia is brought about. On the next count, the effect on uterine contraction, nitrous-oxide stands almost alone. No other anæsthetic (one might perhaps make the exception of ethylene) can be given indefinitely, in doses sufficient to obtund the pain, without lessening the force of the uterine contractions. Nitrous-oxide, in fact, seems actually to stimulate uterine contraction, an observation vouched for by many clinicians.

On the final counts this anæsthetic does not come out so well. It is somewhat expensive, it requires a cumbersome apparatus and it necessitates some special training on the part of the administrator, which means that it is not available for the poor and, in this locality, is used practically only for hospital patients. It seems a pity that these considerations debar its use by the rank and file of our physicians who, after all, do the bulk of the midwifery of this country.

It has been the writer's privilege on a good many occasions to administer nitrous-oxide-oxygen to patients in labor. He believes it to have been on the whole a source of comfort to the obstetrician in these cases to have his patients freed from most of their pain during the hardest part of their labor, while the patients themselves constitute the most grateful ones that he possesses. Some observations made as to the conduct of these cases might be of interest and these constitute my only apology for presenting this paper.

For the fullest results, the complete co-operation of the patient is urgently required. To obtain this it is usually necessary to begin the anæsthetic before the commencement of the second stage of labor. At the outset, an effort is made to convey to the mind of the patient a through understanding as to what constitutes an analgesia; at the same time she is to be afforded the comfort of knowing that as her labor progresses more anæsthetic will be available and finally that she will be put to sleep, not to awake up until her baby is born. She is warned also to signify immediately the onset of a contraction, as the successful obtunding of the pain depends in many cases upon prompt administration of the gas. Those patients dozing between pains, either from exhaustion or from the effects of hypnotics which may have been used, if watched carefully will invariably signify the onset of pain by wrinkling the brows, moving a hand or perhaps turning the head. It is quite extraordinary how frequently such dozing patients will make the same sign at the onset of each contraction. With this onset, then, of the contraction the mask is quickly applied to the face and the patient allowed to breathe a

mixture of, say 85% nitrous-oxide and 15% oxygen. If the pain is severe the patient will breathe in and out eagerly without having to be encouraged to do so. If the pain is less severe often the patient needs such encouragement. This mixture usually suffices for the first stage pains, but if the pain is not controlled quickly enough a 90% and 10% mixture may be allowed, provided the pain does not continue long enough to produce cyanosis. In general it is advisable to keep the oxygen percentage as great as possible. When the pain is obtunded the patient frequently will push the mask away from the face herself; if not it is removed by the administrator. This manœuvre may be repeated many times with absolute safety, since the gas absorbed is eliminated during the interval. It is the opinion of the writer that the introduction of nitrous-oxide does frequently increase the strength of the contractions. Dilatation of the cervix under these conditions soon becomes complete, the increase in strength of the contractions now necessitating a corresponding increase in the number of inspirations of the mixture. When dilatation is complete, it seems worth while to at once institute bearing down efforts on the part of the patient, although this is done only with the consent of the obstetrician. The patient is now told that if she will bear down that her labor as a result will be shortened. Most primiparae have no idea what the term means or how they should go about it. The best way to explain this latter is to tell them that they must hold their breath, at the same time pressing down as if straining at stool. With the onset of the contraction she is made to breathe in and out of the mask till the pain is gone, the number of inspirations required being found by trial. This number varies from three to eight or ten in different cases and also varies in the same individual as labor progresses. When one feels that the patient is experiencing little or no pain she is told to hold her breath at the end of an inspiration and then to bear down. After an interval of bearing down she is told to exhale and to take another inspiration. This time the percentage of oxygen is increased to 50% to counteract the anoxæmia which might be induced by such holding of the breath. If the contraction continues, a third such inspiration may be allowed It is important that gas be given, preliminary to the bearing down, in sufficient quantity to relieve the pain as, otherwise, the patient will neither relax nor bear down. It is equally important that the patent hold her breath while attempting to bear down as unless the glottis is closed, little or no pressure on he fundus can be brough about by any muscular effort of the patient. With some women a great deal of patience is necessary to secure such complete co-operation, but usually it can be obtained, except perhaps in those cases in which the anæsthetic is not commenced until involuntary bearing down efforts are already established. This bearing down by a patient in possession of all her senses except that of pain, with her strength undiminished and with a uterine muscle not weakened by the anæsthetic, has the result of shortening the second stage. In many cases the head will reach the perinæum in a few minutes. These voluntary efforts may be made use of to distend the perinæum until the obstetrician wishes them abolished, when, for the first time, often, analgesia is replaced by light anæsthesia.

One now has an unconscious patient, making no voluntary movements, yet one whose uterine contractions are going on regularly as before, although the writer believes, with slightly lessened force. With ether or chloroform, an anæsthesia of the same depth would very materially lessen the force and number of such contractions, which effect continues for some time after the anæsthetic is withdrawn. With gas, should the force of the contracting alone be found not sufficient to deliver the child, the anæsthetic may be withdrawn or preferably the stage of analgesia be reinstituted and in a moment further bearing down efforts may be brought into play. This flexibility of nitrous-oxide constitutes one of its greatest advantages. Further use may be made of this attribute when forceps delivery is necessary. The patient, after anæsthetization, is put into position and the forceps applied. Considerably less traction on the part of the obsetetrician is necessary if such traction is exerted in conjunction with the uterine contractions and still less if the anæshetic be reduced to the point where the patient will bear down when requested to do so. A patient managed with nitrous-oxide, whether delivered by her own efforts or by forceps, wakes up in a minute or so with her vigor, both mental and physical, surprisingly unimpaired. The picture is so different from one handled with ether or chloroform that one feels that the effort expended has been worth while.

The average patient, particularly a multipara, may usually be carried throughout without the addition of ether. Some women seem peculiarly resistant to the action of nitrous-oxide and these require some additional ether as frequently will difficult forceps deliveries and frequently also the repairing of perinæal tears. It is better to add some ether to the gas than to reduce the percentage of oxygen in the mixture below ten. While the writer has had no personal experience with ethylene in obstetrics, from the experience of others he believes a change to ethlyene would be preferable to such a nitrous-oxide-oxygen-ether mixture.

In most cases, spontaneous breathing of the child occurs quickly and if not resuscitation should be, and one believes is, easier than when chloroform or ether has been the anæsthetic. Even when cyanosis is present at birth, which, of course, is the result of faulty administraton, the child often gasps immediately it is born. If not a prompt change to pure oxygen will often produce a pinker baby, although this is not always the case, as separation of the placenta may already have occurred.

It is, of course, true that many labors may be conducted with safety and general satisfaction with the use of other anæsthetics. There are, however, several considerations which might be mentioned in justification of a preference for the use of nitrous-oxide-oxygen even in these cases. In general it may be said that, with its use, more patients will deliver themselves unaided and that, less often, there will be need of a resort to the use of pituitrin. Also, as has been pointed out, it may be commenced with safety and in fact preferably in the first stage of labor, thus reducing not only the amount of hypnotic drugs necessary for first stage pains, but also the length of time that one has to depend upon them alone for the relief of pain. Lastly, there is the greater well-being of the patient in the early hours of her puerperium.

On the other hand, there are many cases in which for best results, nitrous-oxide is indispensable. As an example one might instance the difficult second stage due to some disproportion between the sizes of the fœtal head and the maternal pelvis, a fairly common occurrence as you all know. With chloroform or ether given even in moderated doses it is difficult to induce bearing down efforts on the part of the patient for any length of time; furthermore the force of the uterine contractions in the course of an hour or so become lessened with the combined result that a high forceps operation is necessary. With nitrous-oxide, as has been shown, uterine contractions continue undiminished and the patient will bear down provided her pain is obtunded. It may require two or three hours of such effort, but the result is often a medium forceps operation which may mean the difference between a living and an injured or dead baby. It is imperative, of course, that the fœtal heart be closely watched, as fœtal distress may occur during this moulding process and if so, prompt delivery is indicated. Again, in breech deliveries it is a great advantage to have strong contractions and a bearing down patient after the umbilicus is born.

Finally, there are statistics which show that the incidence of post partum haemorrhage is less when this non-paralyzing anæsthetic is used. It has been said also that breast milk appears earlier than when lipoid solvent anæsthetics have been used. The writer has no personal data upon which to base these statements, but it seems reasonable to believe that they may be true.

In conclusion one may state that it seems to be to the best interest of the mother both during her labor and after, of the child, and therefore of the obstetrician, to make nitrous-oxide-oxygen the anæsthetic of choice in labor.

THROMBO-ANGIITIS OBLITERANS (BUERGER'S DISEASE)

F. R. Pember, B.Sc. (Med.), '26

Definition.

Thrombo-angiitis obliterans is a disease of unknown origin of the blood vessels or blood, characterized by obliteration of the vessels of the extremities, and followed by certain trophic and vasomotor disturbances.

History.

There has been a keen interest in this disease since L. Buerger published his brilliant contributon to the pathology in 1908. It is interesting because: 1. It is a disease concerning which we know very little. 2. It affects young individuals. 3. It is usually an intensely painful disease. 4. It is a slowly progressive disease.

Etiology.

The etiology of the disease is still a matter of speculation. After observing the clinical manifestations and pathology there can be little

doubt as to the infectious nature of the disease. Though an etiological organism has not yet been proved this seems to be the most promising field of research.

Pathology.

Thrombo-angiitis obliterans is a true angiitis, involving all the tissues of the blood vessels; the veins as well as the arteries in 40% of cases. Superficial and deep veins and arteries are involved, but all the vessels are not equally affected. An acute inflammatory lesion and occlusive thrombosis are the charactertistic lesions. All stages in the occlusive change may occur in the same vessel in different parts of its course. The closure of vessels is effected by red obturating thrombi; these become organized, vascularized, and canalized.

Certain changes in perivascular tissues, in the adventitia, media, and intima, accompanying the occluding process. There is moderate thickening of the intima; this is not sufficient to cause marked narrowing of the lumina of the vessels, and plays no considerable rôle in the genesis of the thrombotic process. The media and adventitia show cellular infiltration and vascularization wherever thrombosis has occurred. The occluding masses frequently terminate in apparently normal vessels. The media changes never extend into the walls of the vacant portions of the vessels. This is sufficiently marked to make it appear that the same agent which calls forth the coagulation of the blood is also effective in producing the mesarterial lesion.

The lesions in the thrombo-angiitis obliterans in chronological order are:

1. An acute inflammatory lesion with occlusive thrombosis.
2. The stage of healing: with organization and canalization of the clot, and the disappearance of the inflammatory products.
3. The development of fibrotic tissue in the adventitia that binds together the artery, veins, and nerves.

Incidence.

Thrombo-angiitis obliterans is a universal disease, quite common among Jews and relatively uncommon among Gentiles. The vast majority of cases occur in Russian, Polish, or Roumanian Jews. It has a predilection for males. The age incidence is 20-45 years.

History of Onset and Complaint.

The onset is very insidious, usually with a history of cold feet and a gradual development of cyanosis, accompanied by tingling and burning in the toes or soles. After the pathology has sufficiently advanced, intermittent claudication becomes a characteristic symptom. The patient can walk on a short distance because of pain in the feet and legs. A brief rest relieves the pain and he can again walk a short distance before the pain recurs. There is no other chronic disease in which pain is such an important factor.

Signs and Symptoms.

The patient with thrombo-angiitis obliterans in its earlier stages may offer no objective evidence of the true nature of the lesion. The interference with the circulatory conditions of the limbs is responsible for most of the clinical manifestations, which become more and more serious as time goes on. When the patient comes to the physician for observation the larger arteries, and often the larger veins, are completely obliterated.

The cardinal symptoms are sensory, vasomotor, and trophic. In an otherwise healthy patient are found on local examination evidences of diminished circulation in one or more extremities. One of the first symptoms to appear is the shooting cramp-like pains in the leg. The intermittent pain and claudication often occurs as the only symptom for many months. This pain is generally in the calf of the leg and precedes gangrene by months or years. The pain and burning is not due to the thrombosis with its resulting stasis, since they are relieved in the position that helps to produce venous stasis.

Reflex vasomotor phenomena of the superficial vessels appear next. They are secondary to the organic lesions in the deep vessels and result in the early appearance of hyperaemia of the toes and dorsum of the foot associated with throbbing and burning. At first these alternate with sensations of formication, coldness, numbness, tingling, and other forms of paraesthesia, but are later replaced by them.

Another type of pain occurs later. It is sharp, excruciating, persistent, and localized at the seat of an ulcer, driving the patient almost insane unless it is ameliorated. The pain increases in direct ratio as the gangrene becomes more evident.

Examination of the limb should include:

1. General appearance of the limb for evidence of impaired circulation or vasomotor disturbance.

2. Appearance in the pedent position: rubor caused by compensatory dilatation of the superficial capillaries is most characteristic of the disease.

3. Blanching on elevation. The extent and rapidity aid in estimating the amount of obstructive arterial disease.

4. Angle of Circulatory Sufficiency: is determined by raising up the affected limb, then gradually lowering it to the angle at which a reddish hue returns.

5. Absence of pulsation, as an indication of arterial occlusion. The dorsalis pedis, anterior tibial, posterior tibial, popliteal, and femoral arteries are occluded in the order named.

6. Reactionary rubor: is an induced rubor that manifests itself in the pendent position after the limb has been previously elevated. It may be present long before the chronic condition of rubor develops.

Classification.

Clinically the cases fall into three groups:

A. Early type: limited to the lower extremities without gangrene.

B. Chronic type: limited to the lower extremities, with gangrene of one or both limbs.

C. Chronic type: with involvement of both the upper and lower extremities.

Diagnosis.

Early diagnosis is important. The important points are: 1. The racial (Hebrew), the sex (male) predilection. 2. Early involvement of the lower extremities. 3. Early symptoms of pain or intermittent claudication. 4. Evidence of pulseless vessels. 5. Presence of a migrating phlebitis. 6. Blanching of the extremity in the elevated position. 7. Rubor in the pendent position. 8. Absence of simultaneous, symmetrical involvement. 9. Slow, progressive, chronic course terminating in gangrene. 10. Remissions for 1-2 years are not uncommon.

Differential Diagnosis.

Early cases are mistaken for neuritis, weak foot, metatarsalgia, or arthritis. Thorough examination of the limb as outlined will differentiate these. Thrombo-angiitis obliterans simulates clinical complexes brought about by arterial occlusion from other causes. In the gangrene stage other types of gangrene must be excluded. The gangrenous lesions are not merely the result of mechanical obstruction in this condition, but are due to some agent which has a direct action upon the local tissues as well as its blood supply.

1. Gangrene due to an injury from without, resulting in thrombosis of the artery, develops within 48 hours.

2. Thermal gangrene resulting in thrombosis likewise develops within 48 hours.

3. Embolic gangrene secondary to myocardial disease is sudden in onset.

4. Arteriosclerotic endarteritis obliterans: the patient is usually over 50 years of age; vasomotor phenomena are infrequent; physical manifestations of impaired circulation are few prior to the onset of gangrene; not limited to males or to a racial group.

5. Luetic endarteritis leading to occlusion of the peripheral arteries of the extremities is rare; can be differentiated from thrombo-angiitis obliterans only by the presence of other evidences of syphilis.

6. Peri-arteritis nodosa in its early stages presents symptoms of severe intermittent claudication similar to thrombo-angiitis obliterans. It is rapidly fatal, lastng only 8-12 weeks.

7. Raynaud's disease: sudden onset with regional ischaemia, absence of arterial occlusion between attacks, and symmetrical gangrene.

8. Acrocyanosis, is a progressive, slowly developing asphyxia of the ends of the extremities; generally associated with pulmonary osteoarthropathy.

9. Erythromelia: chronic localized hyperaemia with pain and swelling; no blanching on elevating the extremity.

Complications.

Thrombo-angiitis obliterans is often associated with thrombo-phlebitis of the superficial veins of the arms and legs.

Infections and ulcerations are common and often initiate the gangrene. They frequently follow slight abrasions being at times the first sign of the disease. Gangrene may develop as soon as three weeks and as late as twenty years after the onset of symptoms, the usual duration being 1-2 years. 52% of Buerger's cases came to amputation because of gangrene.

Treatment.

I. Medical:

1. Rest is of extreme importance.

2. Baking, hot air, diathermy, and alternating hot and cold plunges, may afford some relief.

3. Hypodermoclyses of Ringer's solution have been found to be of doubtful value.

4. Intravenous sodium citrate administration definitely relieves the pain in some cases.

5. Morphine should not be withheld from these patients, for it is the one remedy that affords relief from the unrelenting, excruciating pain.

II. Surgcal Treatment:

(i) Ligation of the femoral vein.

(ii) Arterio-venous anastomosis.

(iii) Peri-arterial sympathectomy.

(iv) Amputation: is usually resorted to sooner or later. It is the only satisfactory symptomatic treatment.

Prognosis.

The duration of cases varies from 1-20 years as regards life. The seriousness of any case depends directly on the degree of blood-vessel obstruction. The average life of the limb after the onset of symptoms is one to two years.

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A PHYSICAL CONSTANT

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In any exact examination of the physical properties of matter—such as, for example, the melting point, the electrical conductivity, or the density of a substance—it is found convenient to attach clearly defined numbers to these properties. Not only is it convenient—it is quite necessary to have such numbers if any real progress in science is to be made. Thus the density of copper is 8.93, its electrical conductivity is 5.618×10^5, its melting point is 1084 expressed in suitable units. Such numbers, of which a large collection now exists, are called physical constants and they are indispensable in the study of any exact science. They have also an importance in industry which is frequently overlooked, and it is a matter of some interest to select one of them and trace its value throughout the various activities of modern life. Let us turn for a selection to a constant whose usefulness is perhaps not so obvious on first thought as that of some others—namely, the index of refraction. Amongst the various physical constants associated with the optical properties of matter, such, for example, as the velocity of light "in vacuo", the length of light waves, the optical rotation, etc., one of the most important, and certainly one of the oldest historically, is the index of refraction.

The index of refraction for any substance is a number expressing the ratio of the velocity of light in a vacuum to its velocity in the substance It is actually found in any special case, not by determining the velocities above-mentioned—which would be a very expensive process—but by measuring two angles in a way known to any school-boy, and finding the quotient of their sines. Since the index has a value for each colour, it is usual to determine it for at least three representative colours sufficiently definite to be called monochromatic. The colours usually chosen are a red—the C line in Hydrogen—a yellow—the D line in Sodium, and a blue—the F_1 line in Hydrogen. For example, these three values for Rock salt are 1.5407, 1.5443 and 1.5534.

But one may go a step further and determine the index for a whole series of colours from red to violet. These may then be plotted on a graph—index against wave-length—and the resulting curve used as an indication of the optical character of the substance. Such a curve is called a dispersion curve. It is as characteristic of any substance as hardness is of a diamond, or as a robin is of spring-time, and on that account is of great practical service in a number of industries.

In the manufacture of acids, oils, alcohols, etc, where a certain standard of purity is desired, some means of readily determining the degree of purity must be employed. The refraction index of a liquid is one of the best constants for the purpose. Any departure from an assigned standard of purity is accompanied by a change in index, and the only question is whether the degree of purity can be followed best and with least expense by observing this particular constant instead of

some other—as for example, the specific gravity. In many cases this is true. Refractometers simple to manipulate and of high accuracy are now made which will give the index very readily to four places of decimals. It is thus possible to avoid the labour and expense of a chemical analysis, which frequently would be a considerable task by comparison.

The same problem, viz., the standardizing of a product, arises in the manufacture of various food materials—butter, margarine, lard, oils. An oil of standard quality has an index for a given colour which is quite definite, and the index is thus a guide to its purity. In the case of solids, such as butter, the index is measured at a temperature above its melting point. This sometimes necessitates the additions to the refractometer of a heating device which will maintain a steady temperature, and nearly all good instruments are now provided with such a device. At the present time when several varieties of synthetic foods are being made on a large scale, it is evident that some convenient method of controlling the quality is essential, and the index is a very convenient aid.

The official food inspector finds the refractive index a very useful number and he accordingly makes use of it also—and determines thereby amongst other things, the presence of added water in milk serum.

The chemist frequently turns to this physical constant for assistance in determining the concentration of a solute in a solvent. The index of a solution of salt in water varies with the percentage of salt to such an extent that the index will give the concentration fairly well. The same is true of organic solvents also. Sometimes the constitution of a substance is in doubt—an occasional event in organic chemistry. In such cases the index of refraction, coupled with a density determination, frequently furnishes the desired information.

One of the most important industries, however, in which the index of refraction is an indispensable aid is the manufacture of optical instruments—that is to say, of the optical part of such instruments. So highly specialized has this work become that the manufacture of optical glass is itself a separate industry, and firms like Chance Bros. in England, and the St. Gobain Works in France, produce a great variety of glass for optical instruments. For the benefit of instrument manufacturers these glasses are listed with their chief refractive indices and dispersions, without which even the simplest doublets could not be designed. Some idea of the importance of these indices to the optical industry, and of the care with which they are measured, may be formed from the fact that a good spectrometer for the purpose costs $1,500 or more. One of the most interesting pages in the history of optical progress is that which describes the search for new and stable types of glass—types which theory predicted as necessary to the perfecting of optical instruments.

It may be of interest at this point to refer to the manufacture of so-called artificial stones to replace the precious stones as jewels. It is possible to make a kind of glass of a fairly high index—1.8 to 1.9—which is used as a substitute for diamond. It can scarcely hope to rival the diamond, however, either in hardness or in refractive index, which

reaches the value 2.4, and even more in some types. Glass made for this purpose is called Strass, or paste. It may be coloured so as to imitate the ruby, emerald and other genuine stones, and in some of these cases the imitation is so good that it can hardly be detected.

It is in the realm of pure science, however, where this optical constant rouses the imagination. Here we have a number which links together on the one hand—the velocity through those vast chasms of interstellar space of a swift, silent, mysterious, beneficent agent called light—and on the other hand—its velocity through those ultra-microscopic, intermolecular, subatomic avenues of dimensions, small even to Lilliputians, which occur in transparent matter. The mind is in a dilemma of wonder at the remarkable properties of light itself, and at the wonderful structure of matter which it reveals. Who, to-day, can read unmoved the simple and astonishing statement that the index of e.g. Flourite is 1.4339 at normal temperature and pressure for a wave of length 5893 A.U.? There is little doubt that some of the most fascinating secrets of Nature are connected with this physical constant—secrets which await the persistent exploration of science.

In conclusion reference may be made to the entertainment to be obtained from numerous simple experiments whose effects turn upon the index of refraction. The following is one of many. Immerse a rod of ordinary crown glass in benzene. When observed in sodium light the boundary between glass and liquid is hardly visible, since both have almost the same index for that colour. In daylight, however, the boundary is markedly visible, and in colours—due to the difference in dispersion of the glass and the benzene.

Dissolve Naphthaline in the liquid so as to increase its index and the rod will be easily visible in the sodium light.

INFLAMMATION OF THE SKIN DUE TO LOCAL IRRITANTS

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Many irritants of vegetable and mineral origin are capable of producing an acute or subacute inflammation in the skin. This varies in severity according to the nature of the irritant, the time it has been in contact with the skin, the susceptibility of the individual, and the delicacy of the skin in the region affected.

Such irritants as acids will cause a dermatitis in any skin, but the majority require an individual susceptibility before they can exert harmful influences, and when this exists the slightest exposure may be sufficient to bring on an attack. The idiosyncrasy may be due to a congenital defect of the skin, such as Xeroderma, where the skin is unusually dry, scaly and easily affected; or it may be acquired from a lowered skin resistance from some general illness or from some preëxisting cutaneous condition. An example of the latter is that of Seborrhoea,

where the skin is abnormally greasy and forms a suitable medium for the growth of microörganisms.

The factor of susceptibility is clearly shown in connection with dermatitis arising from various occupations; for example, a number of women may be employed in a candy factory as chocolate "dippers", and have their hands constantly exposed to the chocolate, and in only one or two may a sugar dermatitis develop. Another example is that of women wearing fur collars which have been treated and dyed in a similar manner. A few individuals among many will develop a dermatitis arising from the action of the dye or the bi-sulphide of arsenic used in dressing the fur. In a susceptible individual the dermatitis may come on soon after the exposure to the irritant, or it may not appear till after repeated exposures extending over years. The latter effect is well illustrated in the case of a chocolate "dipper" who had worked for seven years without dermatitis. During this time the dehydrating effect of the sugar had so reduced the protective power of the horny layer of the epidermis that a slightly excessive exposure was sufficient to produce an eruption. Once the attack has occurred the susceptibility may be so increased that the mildest exposure, which in the first instance would have been incapable of doing harm, will be followed by a recurrence which may be more severe than the original attack, and may involve not only parts in contact with the irritant but also regions upon which it could not possibly have acted directly.

The severity of the dermatitis varies greatly in different cases. It may consist of diffuse erythema or of papular lesions with burning or itching, or may be more acute and be vesicular or bullous. In the more severe cases superficial ulceration may occur either as the result of secondary contamination with microörganisms or from the action of the irritant itself. If further exposure to the irritant be avoided and suitable treatment be carried out, the eruption usually runs a short course and healing rapidly takes place.

In the majority of cases the dermatitis is similar, both clinically and histologically, to eczema. The most usual location for lesions brought on by external irritants are the hands and forearms, the face, and the sides of the neck. Any part of the skin surface may be affected either from direct irritation or from some unknown cause after repeated exposure to the irritant has sensitized the skin. The duration of an attack varies considerably, but first outbreaks usually respond to treatment more readily than recurrent attacks.

The irritants which are responsible for dermatitis are so numerous that mention will only be made of a few of the more common. Many of the irritants belong to the vegetable kingdom, such as fungi and numerous plants. More than a hundred plants have been found capable of setting up a dermatitis. The type of eruption varies according to the plant and the individual susceptibility. It may be erythematous, vesicular, bullous, or very much swollen, and is invariably itchy. In some instances it is the milky sap of the plant which is responsible for the dermatitis; in others, the secretion of the glandular hairs about the stalk, leaf or flower. The eruption may appear, not only as a result of

touching the plant, but indirectly by an object which may have been in contact with it and have picked up the irritating substance.

The skin is particularly sensitive when moist from perspiration or wet from rain, and the plants themselves are more irritating when wet than dry.

The Rhus family is a group of plants which may cause severe dermatitis. Of these, the most irritating is the Rhus Toxicodendron or "poison ivy". Its action is the result of a volatile acid which is present in the milky sap. Other plants of this family are "poison ash", "poison oak" and "poison sumach". From the latter the black varnish, Japan lacquer, is obtained.

Primula obconica is one of the most common of the "poison plants" in this country. It is a primrose with whorls of small pinkish or purple flowers. In susceptible individuals who handle the plants, an attack of dermatitis is almost certain to occur in spring when the primula is in flower. Of other plants which may set up an inflammation in a susceptible skin only a few of the more common may be mentioned, such as narcissi, daffodils, hyacinths, chrysanthemums and hybiscus.

Treatment depends on the degree of inflammation, and is similar to that used for eczema. Where only erythema is present, this can be reduced by lead lotion, calamine lotion or boracic acid solution followed by a bland dusting powder, such as equal parts of zinc oxide, starch and talc. Should the skin be broken from the rupture of vesicles and bullae, an ointment, such as 1 per cent. Ung. Hydrarg. Amm. may be continuously applied to prevent suppuration. Crusts and discharge should be removed with warm boracic compresses and followed with boracic acid ointment.

Those subject to dermatitis, and who are exposed to irritants, should take such precautions as wearing gloves, or the applying of an adhesive powder, such as Zinc oxide, ounce 1; Calamine, ounce 1; Amyli, ounce 1; Creta prep., ounce 1, and Oleum amygd., ounce ½. In many instances it is necessary for the patient to change his or her occupation.

GLIMPSES INTO THE LIFE OF AN EARLY DEVOTEE OF MEDICAL SCIENCE: ALBRECHT VON HALLER*

Mary Jackson, '29

The Eighteenth Century was an era consecrated to the classification of scientific knowledge, in which the scattered and dust-covered treasures of previous centuries were gathered together and arranged, so as to indicate where search should be made. In this connection Haller's work stands out as the foremost of the century—not for the greatness of a single isolated discovery—but for the innumerable important facts which serve as foundation stones for so much of our modern knowledge. It is only by regarding his work in this manner we can give him full credit, and the honour which he rightly deserves.

*Read before the History of Physiology Option Class, February 22nd, 1926.

Albrecht von Haller was one of the most illustrious of the sons of the famous Swiss town, Bern. His father was an attorney-at-law, belonging to a prominent family who for many generations had resided there. Of consequence, on October 16th, 1708, when Albrecht was born, he was to be given all the comforts and privileges a son of such a family should rightly deserve.

He was affected by ill health and of consequence prevented from taking part in boyish sports, thus having ample opportunity to develop a precocious mind. At the age of four, he read and expounded the Bible to his father's servants—before 10 years he drew up a Chaldee grammar and prepared a Greek and Hebrew vocabulary for it, besides writing a satire in Latin verse on his tutor. It is said that he entered upon an emotional period at the age of twelve, and at that time, while sick with smallpox, and inspired with love for the young lady that read aloud to him, he dedicated his first poem to her, entitled "The Resolution of Love". At fifteen his mind seems to have more serious trends, as he translated Horace and Vergil in poetical form. On his morbid days, he would lock himself in his room, seeing no one, consoling himself only by poetry and the study of foreign languages.

His attentions were first directed toward the profession of medicine while reading in the house of a physician, while still a boy. In his 16th year he entered the University of Tubingen, remaining there only two years, disatisfied with the laxity of the professors and the carefree life of the students. From there he went to Leyden, attracted by the renown of Boerhaave, as were the students of Medicine from all Europe. Boerhaave, at this time, was at the pinnacle of his fame and he undoubtedly had a tremendous influence on the young student, Haller. He graduated from Leyden in 1727, at the age of nineteen. His first indication of accurate observation was shown by his thesis for graduation, when he successfuly defended himself by proving that the recently discovered "salivary duct", by an eminent anatomist, was only a vein.

He then travelled extensively, visiting England, including Oxford and London, attracted to the latter by the fame of Newton. In Basel he spent some time studying higher mathematics under the famous Bemonilli. At this time he married, and it is said that the major portion of his wedding day was spent in solving a problem in differential calculus. When his studies were completed he returned to his native Bern and began to practice as a physician, though devoting his best energies to botanical and anitomical research. Meanwhile he applied for the position as directing doctor of the city hospital. It was refused—not for his lack of skill—but simply because he was a poet and didn't confine his mind solely to medical subjects. He later received the reluctant, but welcomed recognition by being made librarian of their city. He consecrated himself to the task as if it were the only interest of his life. Due to his splendid education he was well acquainted with the works, both past and present, and hence was thoroughly capable of bringing order to their library where chaos had lately reigned.

A friend, influenced King George of England and Electorate of Hanover, in Haller's behalf, thus granting the latter a position at the

newly founded University of Göttingen. This entailed the chairs of medicine, anatomy, botany, and surgery. As it was a new institution, all the work of organization in these departments fell on Haller's shoulders. It, however, gave him ample opportunity to enter upon a responsible career in which his scientific enthusiasm could have full scope. He developed a botanical garden, built and stocked an anitomical museum, besides giving numerous lectures and also carrying out those original investigations in botany, anatomy and physiology—the results of which are associated with his name to-day. He continued his youthful habit of poetical composition—conducted a monthly scientific journal to which he contributed over 12,000 articles relating to almost every branch of human knowledge.

At the end of his stay in Göttingen his distinctions read like a list of the Greek ships before Troy. One was body physician to the King of England,—another, fellow of the Royal Society, and every scientific body in the world granted him membership. Enticing positions with a high salary were offered him at Oxford, Berlin and Vienna. These he refused. In spite of his outstanding success, he never felt at home in Göttingen, and lived daily for the call of his native city, Bern—when he might go back and direct his best efforts for its citizens' benefit and their honour. The more honours he received, however, the more jealous they became. Finally the council was practically forced to invite him to accept office. This was when he was forty-five years old. It was probably the happiest moment in Haller's life. He returned immediately. When the most eminent scientist then living returned home were the buildings decorated and the flags flying? Haller returned to Bern a suppliant, with not a shout heard or a cap raised.

His remaining years were devoted to the people, by draining their waste lands and controlling the epidemics. He also completed the last volume of his "Elementa" and had it published. After ten years of sacrifice, poverty and the upkeep of a large family, it made him again think of Göttingen and the chair of Medicine which was still open for him. His happiness was still unattained, for he had not won the Bernese affections. Finally the council in meagre recognition of his services voted him a pension of four hundred cronins. It sufficed, and he renounced Göttingen forever.

By this time his strength was fast failing and due to harassing pain, he relapsed to the constant use of opium. Probably the excessive use of this hastened the end, and he died on December the seventeenth, 1777, at the age of sixty-nine. His last words as he was dying, with his finger over his pulse, were, "the artery no longer beats".

FACULTY NOTES

Bound Copies of the "Journal"

Readers desirous of preserving their copies of THE JOURNAL will be ready to take advantage of the offer made by the University of Toronto Press to suitably bind them for $1.50 per volume. Considerably lower rates are offered for grouped orders.

Back Numbers

An order form for back numbers is to be found in the April issue. THE JOURNAL will be glad to purchase, at their face value, any of the numbers advertised as out of print, if in good condition and so aid those endeavouring to complete their volumes.

Editor for Next Year

Readers of THE JOURNAL will welcome the announcement of the Medical Society that Mr. W. S. Keith, of the class of 2T7, has been appointed editor-in-chief of THE JOURNAL for Volume IV. With the utmost confidence in his ability, the outgoing board of editors wish for him every success in his efforts.

Subscriptions to the Journal

Members of the graduating year will be given an opportunity to subscribe to THE JOURNAL before leaving the University, and their support is requested. The value of THE JOURNAL will be as great after as before graduation.

Carbohydrate Metabolism and Insulin

We are anxiously awaiting the appearance under the above title of a new Monograph on Physiology written by Professor J. J. R. Macleod. A privileged inspection of the final proofs has entirely confirmed the expectation that the undoubtedly greatest authority upon the subject has entirely lived up to his former standard of literary excellence and scientific attainment. A Longmans, Green and Company publication, it will be available in the course of a few weeks and is certain to bring still further honour to its author and our University.

Torontonensis

TORONTONENSIS 1926 is among us. We are compelled to admit disappointment. Last year's volume was such an advancement over those of the past that we felt Torontonensis was really coming into her own. No real further initiative has been shown in the present volume. The excellent photographs of unusual glimpses of the buildings are very interesting and unique, but are scarcely in a class with Mr. Staple's etchings. Most graduates, who still continue to possess only one such volume, prefer views with a few more memories attachable to them. If a University Annual be not bound in black why should green be chosen in preference to the University's colours? Campus Life, a section of great possibilities, does not come up to expectations. The book, as in the past, has many fine features and is one which we

shall treasure. Until such time, however, as contributors are given an opportunity to make certain that their copy is correctly set forth, and until the Editorial Board have a little more to offer, there can be no hope of Torontonensis coming into the possession of others than the graduating classes.

Athletic Society

The sporting season of the year 1925-26 winds up with ice-hockey. The University of Toronto Hockey Team was a wonderful team. With a history of colds and injuries that was almost heart-breaking they played right on and well. Such an exhibition will long be remembered by those who saw the games. In both the Toronto games they gave their all, but harrassed by injuries and, playing with but one substitute, they went down fighting.

Louie Hudson, the captain of that team, was greatly handicapped by a broken thumb, nevertheless he was a tower of strength and played brilliant hockey.

Joe Sullivan, another veteran of the team, put up a splendid defence in goal, saving at times brilliantly, allowing very few to beat him, and those only the impossible.

Ned Wright, another veteran, was used as a substitute. He was called upon for a great deal of work and he did it. He played well.

These are the men that Medicine has representing her on the University Hockey Team. We are proud of them after such a game exhibition, and rightly so.

It is with pleasure that we have learned that the Students' Administrative Council have presented trophies in the form of suitable watch fobs, to the graduating members of this year's hockey team. "Joe" Sullivan and "Lou" Hudson, representing Medicine, were prominent among the recipients.

Medical Society

Members of the Medical Society who are subscribers to the Medical Sick Benefit Fund, 1925-26, having claims to present are requested to do so immediately. Receipted bills, together with a statement of the nature of the illness causing the expenditure, should accompany the claims.

Mr. Rutherford, President of the Medical Society for the year 1926-27, has been elected as representative of the Students' Administrative Council to the Hart House Board of Stewards for the coming year.

INDEX

A

PAGE

tion and their Treatment, The Clinical Types of—A. C. Taylor, M.A., '26. 245
atomy of the Seventh Cranial Nerve, Some Important Points in the—Eric A. Linell, M.D. (Manc.) 58
malies of the Kidney and Their Clinical Significance—J. C. Watt, M.A., M.D. 228
endicitis with Symptoms Referable to the Genito-Urinary Tract—M. H. V. Cameron, M.B. 268
ists and Medical Illustrating, Some Great—G. S. Foulds, M.B., M.S. 107
Doctor, The—David Rorie, M.D 57

B

cteriophage—(Ed.) 127
nard-Gye Microscope, The (Discovery of Cancer Germ)—E. F. Burton, B.A., Ph.D 252
umont and Alexis St. Martin, William—W. McKee Master, '28 141
logical Viewpoint, A—W. H. T. Baillie, M.A., M.B 38
od Grouping and the Selection of Donors for Transfusion—I. H. Erb, M.B .. 12
od Pressure, Abnormalities in—T. Allen Sweet, '26 168
ght's Disease, On the Pathology of—B. I. Johnstone, M.B 65, 100

C

pillary Circulation and Its Relation to Surgical Shock—B. R. Dickson, B.Sc. (Med.), '26 204
rbohydrate Metabolism—Liver Function, Some Clinical Aspects of the Newer Work on—Samuel Soskin, '26 215
cinoma of the Rectum—David W. Pratt, '26 254
Carcinoma of the Tongue—(Ed.) 175
Carcinoma of the Tongue, The Treatment of—Douglas Quick, M.B., F.A.C.S. .. 183
Cholecystography—W. H. Dickson, M.D., C. M 281
orionepithelioma—W. H. Hatfield, '26 146
Comparative Analysis of the Size of Certain Public Institutions in Canada, with Special Reference to Mental Hospitals—W. C. M. Scott, B.Sc. (Med.) '27 27
Connaught Laboratories, University of Toronto—D. T. Fraser, B.A., M.B., D.P.H 28

D

Decomposition in Infants—L. Nelles Silverthorne, '26 136
Deficiency Diseases of Children—F. F. Tisdall, M.D 31
Dermatology, X-ray Therapy in—W. R. Jaffrey, M.B 62
Diabetics, Notes for—(Ed.) 176

E

Electrolytic Dissociation, The Origin and Development of the Theory of—W. H. Martin, B.A., Ph.D 150
Endocarditis, The Diagnosis of Sub-Acute Bacterial, Douglas Noble, B.A., '27 294
Energy and Fatigue—F. M. Quinlan, M.A 24
Eye Conditions, The Obligation of the General Practitioner in the Treatment of Common—W. H. Lowry, M.D., C.M. 273

F

Faculty Notes 41, 79, 123, 171, 220, 275, 317
ter, Sir Michael—B. Willinsky, L.D.S., D.D.S. '28 70

G

-Bladder—Late Post-Operative Complications, The—(Ed.) 225
oitre, On the Treatment of Simple—R. C. Coatsworth, M.A., M.B 236
Greek History, An Allusion to—M. H. V. Cameron, M.B 298

H

Haematuria—Robin Pearse, F.R.C.S 85
Heart Disease in Children, Functional—Mansfield G. Levy, M.D 91

J

Journal, The—(Ed.) 1
Journal, Progress of the—(Ed.) 129, 279

L

PAGE

Lactic Acid Milk in Infant Feeding—A. G. Smith, '26, and C. G. Shaver, '26 ... 74
Language of Medicine, The—F. A. Clarkson, M.B. ... 288
Licensing of Medical Practitioners in Ontario, The History of—Burton Yuill, '29 239
Lipiodol in X-ray Diagnosis of Broncho-Pulmonary Lesions—(Ed.) ... 83
Lister, Lord—C. O. White, '25 ... 270
Loeb, Jacques—L. Kazdan, '27 ... 87

M

Malignant Neoplasia, Specific Character of—(Ed.) ... 81
Master-word in Medicine, The—Prof. Wm. Osler ... 258
Mastoiditis with Thrombosis of the Lateral Sinus on One Side which was followed by a Lung Abscess, Report of a Case of Double Acute—C. A. Rae, M.B., F.R.C.S. (Edin.) ... 242
"Myopia"—(Ed.) ... 4

N

Nausea and Vomiting of Pregnancy, The—V. J. Harding, D.Sc ... 5
Nitrous-Oxide in Labor, The Use of—H. J. Shields, B.A., M.B. ... 299
Nutritional Disturbances of Infants and Young Children—J. R. Ross, '26 ... 17

O

Oxygen Debt—J. M. D. Olmsted, M.A., Ph.D ... 139

P

Paracelsus—C. D. S. Leef, '28 ... 9
Perinephric Abscess—T. Allen Sweet, '26 ... 53
Pernicious Anaemia, The Etiology of—Frank A. Turnbull, B.A., '28 ... 133
Physical Constant, A—H. A. McTaggart, B.A., Camb., Ph.D. ... 310
Poliomyelitis, Epidemiology of—A. M. Jeffrey, M.B ... 165
Poliomyelitis and Polioencephalitis, The Pathological Findings in—I. H. Erb, M.B ... 208
Poliomyelitis, Clinical Aspects of—A. P. Hart, M.B ... 212
Presidential Address, The Academy of Medicine, Toronto, October 6th, 1925—F. A. Cleland, B.A., M.B., F.A.C.S ... 50
Preventive Medicine —(Ed.) ... 125
Protein Milk in Infant Feeding—G. C. Kelly, '26 ... 94
Pulmonary Tuberculosis, The Differential Diagnosis of—A. W. M. White, '26 ... 116
Purpura, Essential Thrombocytopenic—R. I. Harris, M.B ... 192
Pyrexia, Some Causes of Obscure—(Ed.) ... 226

S

Situs Viscerum Inversus—A. R. Armstrong, '29 ... 201
Skin, Inflammation of the, Due to Local Irritants—H. A. Dixon, M.B ... 312
Successful Application of Medical Scientific Knowledge to Medical Practice—(Ed.) 43
Suggestion to the Pre-Clinical Years, A—(Ed.) ... 3

T

Tannic Acid in Treatment of Burns—(Ed.) ... 43
Tetanus—(Ed.) ... 177
Then and Now, 1876-1926—Alexander McPhedran, M.D., LL.D ... 130
Thermometry, The Technique of Oral—A. L. Morgan, '27 ... 189
Thick Cereal Feedings—T. G. H. Drake, M.B ... 114
Thrombo-Angiitis Obliterans—Buerger's Disease—F. R. Pember, B.Sc. (Med), '26 305
Thyroid Gland, Palpation of the—(Ed.) ... 280
Toronto Medical School, The—(Ed.) ... 223
Trachoma in Saskatchewan, Some Aspects of—F. S. Leeder, '28 ... 111
Tuberculosis in Infancy and Childhood—D. S. Bennett, '26, and F. T. Fralick, '26 153, 195
Tuberculous Abscess and Sinus, The Treatment of—C. L. Starr ... 179

U

Ulcers of the Stomach and Duodenum, The Treatment of Chronic—C. R. Balfour, B.A., '26 ... 264
Urine, The Immediate Treatment of Acute Retention of—H. W. B. Locke, M.B. 45

V

Von Haller—Glimpses into the Life of an Early Devotee of Medical Science—Mary Jackson, '29 ... 314